Questions

1) What are the procedures now used in your region for economic dispatch?

We do not have any regional procedures for economic dispatch.

Who is performing the dispatch (a utility, an ISO or RTO, or other) and over how large an area (geographic scope, MW load, MW generation resources, number of retail customers within the dispatch area)?

We perform economic dispatch as a single utility. We cover an area of thirteen counties in Southeast Nebraska. Our peak load is 2,223 MWs (summer 2005). We have a total generating capacity of 2,547 MWs (summer rating). We serve about 316,000 retail customers

2) Is the Act's definition of economic dispatch (see above) appropriate?

Yes. A classical definition would not include reliability or transmission elements. However, in the context of performing economic dispatch procedures over a large geographic area, availability of adequate transmission is essential. Of course, if the customers can't be served reliably, then the system is not being operated effectively. So, yes, the definition is appropriate.

Over what geographic scale or area should economic dispatch be practiced?

Because of recognized transmission flow gate limitations, economic dispatch works best when performed among several generators that are clustered in a fairly small geographic area. The more scattered the generators are, the more transmission issues become problematic.

Besides cost and reliability, are there any other factors or considerations that should be considered in economic dispatch, and why?

As the "footprint" of an economic dispatch area grows, it becomes more likely that the next least expensive generating resource will be farther away from the load center. There may not be adequate transmission to get from that inexpensive supply to the load. Additional transmission may be required.

3) How do economic dispatch procedures differ for different classes of generation, including utility-owned versus non-utility generation?

There are all kinds of constraints for different classes of generation: Nuclear units often-time will only operate at constant output. While hydro resources may be the least costly, they are limited by rainfall, river navigation, flood control, recreational uses, environmental rules, etc. Some renewable energy resources, such as wind and solar, are dependent on the weather and time of day, and can't effectively be dispatched.

Whether a generator is utility-owned or not has no effect on how it might be dispatched. It only depends on what contractual arrangements have been negotiated between the non-utility owner and the system to which it is connected. Typically, economic dispatch occurs among commonly-owned generators or contractual joint operation agreements.

Do actual operational practices differ from the formal procedures required under tariff or federal or state rules, or from the economic dispatch definition above?

There are no formal procedures required under tariff or federal or state rules that are applicable to our system. Our system is compact enough that classical economic dispatch can normally be performed without any transmission constraints. There are occasions which arise from time to time that require us to redispatch differently from economic dispatch. For example, if there is a major transmission element out of service, we may have to shift generation around a bit.

If there is a difference, please indicate what the difference is, how often this occurs, and its impacts upon non-utility generation and upon retail electricity users. If you have specific analyses or studies that document your position, please provide them.

There are no significant non-utility generators connected to our system, or connected electrically close enough to our system to have any impact on our dispatch. The only impact any type of economic dispatch has upon our retail users comes in the form of lower rates.

4) What changes in economic dispatch procedures would lead to more non-utility generator dispatch?

For economic dispatch to be effective there must be participation by many generating units. If a non-utility entity has a single generator, no economic dispatch is possible. So, that owner must negotiate contracts with other generator owners in that region to allow that unit to participate in joint dispatch with others.

If you think that changes are needed to current economic dispatch procedures in your area to better enable economic dispatch participation by nonutility generators, please explain the changes you recommend.

(Not applicable)

5) If economic dispatch causes greater dispatch and use of non-utility generation, what effects might this have – on the grid, on the mix of energy and capacity available to retail customers, to energy prices and costs, to environmental emissions, or other impacts?

Most non-utility generation is "merchant" generation. That is, a business decision was made to build the facility with an expectation of making a profit. No doubt, the business plan for that owner will include various forecasts of fuel costs and market prices that predict the unit can be operated in such a way that the owner makes a profit. Very simply, the owner will operate the unit when the cost to produce electricity is less than the market price at that particular location on the grid. Becoming a part of a consortium of generator owners and participating in joint economic dispatch may not be consistent with his motivation to make a profit. In deed, if other units are dispatched ahead of his unit, then those owners will reap more profit. An independent non-utility owner is motivated to run his generation only when he can make a profit. If the non-utility generator owner has multiple units, he will increase his profit by loading his units consistent with classical economic dispatch algorithms. So, that is what he will likely do.

As for effects on the grid, there are already safeguards in place that ensure the integrity of the grid. There are transmission loading relief procedures which will prevent lines from overloading. Existing NERC rules encourage operators to manage the grid such that it can withstand the largest single contingency at any time without disrupting service to customers. As long as these rules are abided by, how non-utility generation is dispatched should not have an impact on the reliability of the grid.

With respect to effects on retail customers, non-utility generator owners will be motivated more by wholesale markets than retail sales. If margins are fat, then new non-utility generation will likely be built, and the supply will be plentiful. Then, competition will drive margins down, and entrepreneurs will be less willing to risk new investment. This is a typical economic cycle.

How would this affect retail customers in particular states or nationwide?

I don't envision any significant impact on retail customers. Whether non-utility generation is participating in some central joint economic dispatch or not, the price signals and profit motivation will cause all generators to operate when it is most appropriate.

If you have specific analyses to support your position, please provide them to us.

Over the past twenty years, both the MAPP region and the State of Nebraska have studied potential benefits of regional economic dispatch. The conclusions were always the same. We are already operating our units at about the same point we would be if we had participated in regional economic dispatch. Any small incremental improvement in performance was not large enough to justify the systems necessary to implement regional economic dispatch.

6) Could there be any implications for grid reliability – positive or negative – from greater use of economic dispatch? If so, how should economic dispatch be modified or enhanced to protect reliability?

The economic signals exist today to motivate generation owners, either utility or non-utility, to operate their generators at the same level that would result from joint regional economic dispatch. Therefore, I wouldn't anticipate any change in grid reliability, because I wouldn't anticipate a significant change in how generators would be dispatched.